

## REMARKS

This is a response to the Office Action dated November 17, 2004, in which claims 1-6 of the present application were rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 4,956,921 to Coles. Applicants respectfully traverse.

In particular, the Office Action asserts that Coles anticipates claim 1 of the present application, because the reference teaches a method for processing information from a downhole tool including steps of “computing parameters of the tool motion in a borehole reference frame based on measurements from the at least one accelerometer and the at least one magnetic induction sensor by taking into account the orientation of said at least one accelerometer in relation to the gravitational field” and of “monitoring the computed parameters and comparing the monitored parameter(s) to standard operating parameters.” (Office Action, ¶1). Applicants respectfully disagree, because the Coles patent does not disclose, teach or even suggest the use of accelerometers and magnetometers to compute parameters of the tool motion. Further, there is not even a suggestion in Coles to monitor the computed parameters of the tool motion to standard (tool motion) operating parameters, as recited in independent claim 1 of the present application.

Coles teaches a method for determination of the azimuth and inclination of a borehole using accelerometers and magnetometers mounted on a drilling tool. (*See, e.g., Abstract*). The patent addresses the problem of deviations in gravitational and magnetic fields measured by accelerometers and magnetometers of a drilling tool due to the extraneous magnetic fields. (*See, e.g., col. 1, ll. 25-33*). Coles proposes to make measurements of the components of the earth’s gravitational field and the earth’s magnetic fields using an accelerometer and a magnetometer carried by the drilling tool. The measurements are then corrected according to calibration factors and modified to be consistent with three a priori geophysical measurements, which include the earth’s gravitational field intensity, the earth’s magnetic field intensity, and the earth’s magnetic dip angle. From the corrected measurements, the inclination and azimuth of the borehole are calculated using conventional formulas for inclination and azimuth. (*See, e.g., col. 3, ll. 56-68*).

In sum, Coles teaches only the use of accelerometers and magnetometers to determine the azimuth and inclination of a borehole. However, there is no teaching or even a suggestion in the Coles patent to compute tool motion parameters. Indeed, Coles makes no reference to tool motion parameters. Consequently, Applicants respectfully submit that the assertion in the Office Action that Coles teaches the steps of “computing parameters of the tool motion,”

monitoring the computed parameters and comparing the monitored parameter(s) to standard operating parameters” and “generating a signal if the one or more monitored parameters fall outside a predetermined range of operating values,” as recited in claim 1, is based on an incorrect reading of the patent. It will be apparent to a person of skill in the art that comparing the azimuth and inclination of the borehole to its expected values, as disclosed in the Coles patent, is different from computing and monitoring parameters of the tool motion - such as stick-slip conditions - as recited in the claims of the present application.

Accordingly, claim 1 as well as the claims dependent thereon cannot be anticipated by Coles. Moreover, since Coles does not even mention tool motion or any need to monitor its parameters, Applicants respectfully submit that the pending claims would not be obvious over the Coles patent, alone or in combination with the art of record, and therefore are patentable.

#### *Claims Amendments*

Claims 1 and 2 of the present application have been amended to correct minor informalities in the language of the originally filed claims. In particular, claim 1 has been amended to recite “said as least one magnetometer” instead of “said at least on magnetic induction sensor,” because the latter phrase did not have a proper antecedent basis. In claim 2, the spelling of word “magnetometers” has been corrected. Applicants respectfully request the Examiner to enter these claim amendments into the record of the present application.

#### *Information Disclosure Statement*

Applicants submit herewith for consideration by the Examiner an Information Disclosure Statement and a list references. Applicants respectfully request the Examiner to enter the cited references into the record of the present application.

***Conclusion***

On the basis of the above, it is respectfully submitted that the present application is in a condition for allowance. A favorable disposition of the case to that effect is respectfully requested. Should the Examiner have any questions or comments concerning this submission, the Examiner is invited to call the undersigned at the phone number listed below.

Date: March 17, 2005

Respectfully submitted,

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